

PATENT COOPERATION TREATY

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From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/012285

International filing date (day/month/year)
29.10.2004

Priority date (day/month/year)
30.10.2003

International Patent Classification (IPC) or both national classification and IPC
C03B17/04, C03B5/167

Applicant
UMICORE AG & CO. KG

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ not paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☒ all parts.
 - ☐ the parts relating to claims Nos.

Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3-5,10-14,20-27
	No: Claims	1,2,6-9,15-19,28-30
Inventive step (IS)	Yes: Claims	-
	No: Claims	1-30
Industrial applicability (IA)	Yes: Claims	1-30
	No: Claims	-

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item IV

Lack of unity of invention

The International Searching Authority is of the opinion that the present application consists of two inventions, and therefore does not comply with the requirements of Rule 13 PCT.

1st invention : claims 1-5, 15-25 (part), 27-30 (part)

They relate to a mandrel and method for making glass tubes or rods, where the mandrel has a self-supporting metal jacket.

2nd invention : claims 6-14, 15-25 (part), 26, 27-30 (part) (see also Item VIII for reasons why claims 14 and 26 are part of the second invention).

They relate to a mandrel and method for making glass tubes or rods, where the mandrel comprises an inner ceramic body and an outer metal jacket, both materials having similar thermal expansion coefficients.

The two inventions have a mandrel with a metal material as common feature. Furthermore the self-supporting structure of the first invention and the matching coefficients of the second invention are corresponding features as they solve the problem of buckling of the metal material surface of the mandrel in use.

However the mandrel with a metal material jacket, the matching coefficients and the above-mentioned problem are known from EP-A-1072569 (see [0015], [0016] and [0044]). Consequently these same or corresponding features are not special technical features in the sense of Rule 13.1 PCT. The two inventions are not linked by a single general inventive concept (Rule 13.2 PCT).

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: DE-C-454877

D2: US-A-2583431

D3 : EP-A-1072569
D4: US-A-3236619
D5: GB-A-2376684
D6 : US-B-6595029
D7: FR-A-2130174

Novelty

First invention

1. Document D1 discloses (see Fig. 1 and p.1, left hand side column, lines 54-67) an axially symmetrical Danner mandrel comprising a self-supporting metal material jacket (a) and an inner channel (c) for blowing gas.

Hence the subject-matter of **claims 1,2, 15-17, 28-30** is not new (Article 33(1), (2) PCT).

2. Document D2 discloses (column 5, lines 30-40, Fig. 2) a mandrel for producing tubes or rods comprising a platinum-rhodium alloy body. Although the hollow body (10) of Fig.2 illustrates another embodiment of a refractory self-supporting body coated with a material like platinum-rhodium alloy, the only possible interpretation of D2 with technical content is that the platinum-rhodium alloy body alone is also hollow and self-supporting. D2 further discloses a mandrel with an inner channel for blowing gas (Fig.2).

Hence the subject-matter of **claims 1, 17-19, 28 and 29** is not new (Article 33(1), (2) PCT).

Second invention

3. Document D3 discloses (claims 1, 2 and § [0044]) a Danner mandrel made of an MgO-MgAl₂O₄ ceramic coated with a platinum-rhodium material, both materials having similar thermal expansion coefficients. The ceramic can be made with addition of water or of organic binders (§ [0041]). Hence the subject-matter of **claims 6-9, 16, 18, 19 and 28-30** is not new (Article 33(1), (2) PCT).

4. Presently method **claim 28** does not contain any limiting feature because of the word "particularly". Hence independently of the objections above (see § 1-3), its subject-matter is not new (Article 33(1) PCT).

Inventive activity

5. Dependent claims 10-15, 17, 20-27 do not imply an inventive activity (Article 33(1), (3) PCT), the reasons being as follows :
- 5.1. The additional technical features of **claims 10-15, 17, 23, 24 and 27** are well-known features of standard Danner pipes (see eg. D4, Fig.3, blowpipe (20), flange (24b) for claims 10, 11, 13-15, 17, 23, 24 or D5, Fig.1 for claim 12).
- 5.2. **Claims 20 and 21** merely refer to a new use of known materials with suitable properties for the present invention (their thermal expansion coefficient is in the range which is disclosed in D1). Their selection is not considered as inventive because they do not provide any further effect over the sum of their individual effects.
- 5.3. The additional technical feature of **claim 22** is known from D6 (claim 1). The skilled person would combine the teachings of D6 with those of D3 or of D1 according to circumstances in order to solve the problem described in D6.
- 5.4. The floating bearing of **claim 25** is considered as an obvious alternative to the fixed bearing of D4.
- 5.5. The spring of **claim 26** is regarded as one of the many possibilities which the skilled person would use according to circumstances to provide a tight fit between the ceramic body and the jacket (see eg in D7, Fig.1 and claim 2 a spring for tightening parts (6) together) (see also Item VIII below).

Industrial applicability

6. **Claims 1-30** meet the requirements of Article 33(4) PCT because the apparatus can be used for making glass tubes.

Re Item VIII

Certain observations on the International application

7. **Claim 6** covers all combinations of ceramic and metallic materials having matching thermal expansion coefficients, whereas the application provides support within the meaning of Article 6 PCT and disclosure within the meaning of Article 5 PCT only for a

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AUTHORITY (SEPARATE SHEET)**

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limited number of materials (see description p. 5, lines 10-24).

8. **Claims 14 and 26** are not clear (Article 6 PCT) : claim 14 should be dependent on claim 6, not on claims 1-5 (no "body" in these claims), and claim 26 referring to the biasing means should be dependent on claim 14.
9. Use **claims 29 and 30** are regarded as equivalent to process claims (see PCT Guidelines A5.21). Hence they are largely redundant with method claim 28. Thus a lack of conciseness arises (Article 6 PCT).